CLINICAL STUDY OF VITILIGO IN PAEDIATRIC POPULATION

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ABSTRACT

Vitiligo is an acquired pigmentary anomaly of the skin manifested by depigmented white patches surrounded by a normal or a hyperpigmented border. We studied the clinical profile of vitiligo in paediatric population in Osmania General Hospital over a period of one year from February 2011 to January 2012.

METHODS

A total of fifty cases of children attending the vitiligo clinic of DVL Department at OGH, Hyderabad were studied. All the children attending the clinic were screened and the sample obtained on fulfilment of the selection criteria. Thirty consecutive adult patients attending the same clinic were taken as controls. This study attempts to identify and understand the features of vitiligo in the paediatric population like clinical spectrum of the disease, demographic features, associated diseases, familial predisposition and to compare all the above to the same features in adult vitiligo patients.

RESULTS

Out of 50 cases the mean age of the children in the study group was 9.71 yrs. while that of adults in control group was 30.26 yrs. The male female ratio in children was 2.1:2.9 and 7:9 in adults. The predominant site was the extremities mainly the lower limbs followed by face. 60 % of the cases were stable. Trauma was commonest predisposing event associated with 20% of children.

CONCLUSIONS

In our study the mean age of children at presentation was higher than other studies. Sex distribution was not significant. Course of the disease was found to be stable. The incidence of predisposing factors was found to be higher in children like trauma, febrile illness and contact with colours/paints, etc. The most common clinical variety was generalised and high incidence of dental caries was noted in the study group.

KEYWORDS

Vitiligo, Paediatric Population, Clinical Evaluation, Familial Predisposition.

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INTRODUCTION: The term vitiligo was first used around 30 AD by the Roman Physician Celsus in his Latin Medical Classic "De Medicina", some believe the term is derived from the Latin 'Word Vitium' meaning a fault 'or' blemish'. The oldest reference is found in the 'Ebers Papyrus' dating back to as far as 1500 BC. Vitiligo is an idiopathic acquired cutaneous acromia characterised by circumscribed chalky white macules. It is sometimes familial and affects all ages, both sexes and all races. It may involve pigment epithelium of the eyes, the inner ear and the leptomeninges. An immense social stigma is associated with the condition, preponderance to paediatric population is more with high incidence of organ specific autoantibodies in children with high incidence of autoimmune and endocrine diseases in their families thus adding to the gravity of psychosocial and economic implication of the disease, in this fragile subgroup of the population. The presence of positive family history of similar lesions in patients of vitiligo has been evaluated in most study. Genetic studies conclude that multiple alleles at an unspecified number of different loci contribute a small effect, which interact with environmental variation, to bring about the trait, high prevalence reported among close biological relatives of affected individuals.

The exact aetiopathogenesis of vitiligo remains a mystery; in spite of extensive research, three hypotheses have been proposed.

1. Autoimmune hypothesis – proposed by Cunliffe et al in 1968.[1]
2. Neural hypothesis – proposed by Lerner in 1959.[2]
3. Autocytotoxic hypothesis —proposed by Lerner in 1959.[2]

Histopathological changes with vitiligo are a complete absence of melanocyte in the basal layer of the epidermis

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with loss of melanin content of the epidermis. The upper dermis has sparse superficial perivascular infiltrate of lymphocytes with a few melanophages. Special staining procedures like Fontana-Masson Staining and the DOPA reaction are helpful for the diagnostic aspects. Clinically, Vitiligo can be differentiated into Focal vitiligo, Segmental vitiligo, Generalised vitiligo. Associated with Koebnerisation. Other cutaneous abnormalities like leukotrichia, premature grey hair,[3] halo nevi[4] and alopecia areata[5,6] may be associated with vitiligo. Peak age of incidence of vitiligo in children is the first two decades of life.

Need for the Present Study: In the light of the large amount of knowledge and information regarding the various aspects of vitiligo, it may be noted that despite a high incidence of cases in the paediatric age group, there have been a very few studies exploring the various features of vitiligo in this fragile subgroup of the population. In view of the more serious psychosocial and economic implications of this disease in children, a need for further study is felt and we have undertaken the present study in our department.

MATERIAL AND METHODS: The study was conducted in the DVL Department, Osmania General Hospital from February 2011 to January 2012. A total of 50 cases of childhood vitiligo were included to study the clinical profile of vitiligo in paediatric population with an objective to identify the natural history and spectrum of vitiligo in children the demographic feature of childhood vitiligo, any associated diseases, to identify the familial predisposition and to compare the all the above features in adults with vitiligo.

Inclusion Criteria:

- Clinical and/or histological diagnosis of vitiligo.
- Children of either sex, aged below 14 years.

Exclusion Criteria:

- Children more than 14 years were excluded.

Controls: Clinical and/or histological diagnosis cases of vitiligo more than 18 years were taken.

After initial screening for the fulfilment of the inclusion criteria, consent for participation in this study was obtained from the patient/attendant. A detailed proforma was filled for each patient covering various aspects like name, age, sex, occupation, history of the present lesion, past history, treatment history, developmental history, family history, personal history and history of emotional stress to the patient.

Detailed general examination of skin, mucosae, hair, nails, palms and soles and other systems were carried out and noted in the proforma. Detailed ophthalmological examination was done for all patients. Examination of ears, nose and throat were done by an ENT Surgeon, with hearing tests and audiometry was done in randomised selected patients.

A detailed dental evaluation was done in all the patients and proper treatment was given if required. Routine laboratory tests were done including stool examination for parasitic infestation for all the patients, examination under Wood's lamp and a skin biopsy were done wherever necessary. Clinical photographs of all cases and controls were taken.

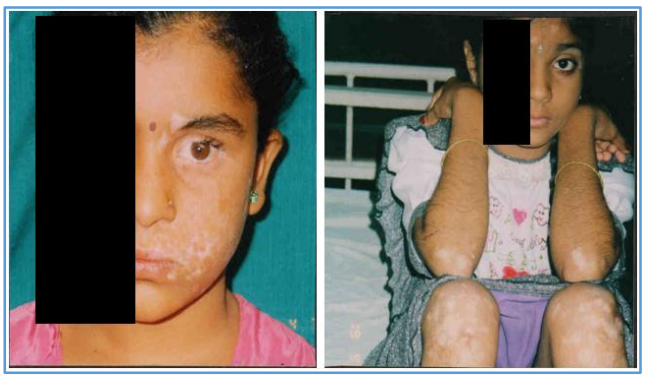

Fig. 1, 2: Segmental & Acral Vitiligo

	Cases	Controls
Minimum age	3 yrs.	18 yrs.
Maximum age	14 yrs.	58 yrs.
Mean age	9.71 yrs.	30.26 yrs.
Males	21	14
Females	29	18
M:F ratio	21:29	14:18
Mean age at onset	8.36 yrs.	26.5 yrs.

Table 1: Age, Sex Distribution

The mean age of the children in the study group was 9.71 yrs. while that of the adults in the control group was 30:26 yrs. The mean age at onset of the lesions in these" groups was 8.3 y and 26.5 respectively. The M:F ratio in children was 2.1:2.9 and 7:9 in adults.

		Trunk	Extremities	Face
Cases	Predominant Site	9	24(48%)	17(34%)
	Site of onset	10(20%)	23(46%)	17(34%)
Controls	Predominant Site	7(23.3%)	18(60%)	5(16.6%)
	Site of onset	6(20%)	17(56.6%)	7(23.3%)

Table 2: Site of Vitiligo

The predominant site, both at presentation as well as at onset, in both the groups, was the extremities, especially the lower limb, followed by the face.

	Cases	Controls
<5	17(34%)	10(33.3%)
5-10	11(22%)	5(16.6) %
>10	22(44%)	15(50%)

Table 3: Number of Lesions

In both the study and the control groups, the number of lesions in more than half the subjects was greater than 10.

	Cases	Controls
Stable	30(60%)	12(40%)
Progressive	20(40%)	18(60%)
Table 4: Progression of Vitiligo		

The course of vitiligo was found to be stable in 20 (60%) of the children and progressive in 20 (40%). However, adults had a higher incidence of progressive disease with 18 (60%) having progressive vitiligo and the remaining 12 (40%) showing stable vitiligo.

	Cases	Controls
Trauma	12(24%)	2(6.6%)
Topical application	1(2%)	2(6.6%)
Physical illness	5(10%)	2(6.6%)
Emotional stress	-	-
Sunburn	-	-
Table 5: Predisposing Event		

A history of trauma preceding the onset of vitiligo lesions was positive in 12 (24%) of the children and 2 (6.6%) of the adults respectively. One child gave history of contact with paint colours prior to onset of lesions while 2 adults gave history of contact with grease/pesticide prior to onset of lesions. Four children had a history of typhoid and one child had a history of febrile illness preceding the onset of lesions while 2 adults had a similar history of febrile illness prior to the onset of lesions.

	Cases (50)	Controls (30)
Photosensitivity	5(10%)	3(10%)
Diabetes Mellitus	-	1(3.3%)
Hypertension		3(10%)
Thyroid	-	1(3.3%)
Ocular	2(4%)	1(3.3%)
Auditory	2(4%)	-
Others	2(4%)	-
Table 6: Associated Conditions		

Photosensitivity was seen in 5 (20%) of children and 3 (10%) of the adults. Diabetes mellitus and hypertension not seen in any children and were seen in 1 and 3 adults respectively. Hyperthyroidism was noted in one adult female (3%). Ocular abnormalities in the form of refractory errors were seen in 1 (3%) each in both the groups while 1 (2%) child had squint. 2 (4%) of the children complained of difficulty in hearing. One (2%) child had history of chronic bronchitis and one (2%) had atopic diathesis.

	Cases	Controls
Similar lesions	11(22%)	2(6.6%)
Consanguinity	15(30%)	4(13.3%)
Premature greying	26(52%)	6%
Endocrine disorder	16(32%)	3(20%)
Other illness	16(32%)	5(16.6%)
Table 7: Family History		

A family history of similar lesions was seen in 11 (22%) of cases and 2(6.6%) of adults respectively. A history of consanguinity among the parents was seen in 15 (30%) cases and 4 (13.3%) controls. A family history of premature greying of hair was seen in 26 (52%) cases and 6 (20%) adults; that of endocrine disorder in the form of diabetes mellitus was seen in 16 (32%) cases and 3 (10%) controls respectively. Other illness in the family ranging from hypertension, hemiplegia, tuberculosis, leprosy and bronchial asthma were seen in 16 (32%) of the cases and 5 (16.6%) of the controls respectively.

	Cases	Controls
Diet-Vegetarian Non-Vegetarian	4(8%) 46(92%)	4(3.3%) 29(96.7%)
Passing worms	6(12%)	
Hobbies	3(6%)	
Table 8: Personal History		

A history of passing worms in the stools was noted in 6 (12%) of cases and none of the adults. Hobbies involving use of paints/colours coming in contact with lesional skin, were seen in 3 (6%) children.

	Cases	Controls
Mild	24(48%)	3(10%)
Mod	18(36%)	18(36%)
Severe	8(16%)	9(30%)
Table 9: Emotional Stress		

Emotional stress due to vitiligo, as expressed by the subject, was graded into three groups - mild (occasional psychological stress, with absent or mild psychosocial implications), moderate (interfering with family work, with moderate psychological stress) or severe (severe psychosocial disability with depression). It was found to be mild in 24 (48%) cases and 3 (10%) of controls; moderate in 18 (36%) cases and 18 (60%) of controls and severe- in 8(16%) cases and 9 (30%) controls respectively.

	Cases	Controls
Anaemia	10(20%)	5(16.6%)
Thyromegaly	4(8%)	1(3.3%)
Table 10: General Examination		

On general examination, clinically detectable anaemia was seen in 10 (20%) children and 5 (16.6%) adults and thyroid enlargement was seen in 4 (8%) children and 1 (3.3%) adult respectively.

	Cases	Controls
Generalised	17(34%)	10(33.3%)
Acral	5(10%)	6(20%)
Acrofacial	6(12%)	6(20%)
Localised	9(18%)	3(10%)
Mucosal	1(2%)	2(6.6%)
Segmental	2(4%)	2(6.6%)
Facial	10(20%)	1(3.3%)
Table 11: Distribution of Vitiligo		

This table shows the sites of distribution of the lesions among the cases and controls.

	Cases	Controls
Koebner's Phenomenon	8(16%)	2(6.6%)
Leukotrichia	16(32%)	11(36.6%)
Mucosal changes	7(14%)	9(30%)
Poliosis	10(20%)	6(20%)
Alopecia areata	2(4%)	-
Palmar hyperpigmentation	4(8%)	2(6.6%)
Halo nevi	2(4%)	-

Table 12: Associated Features

This table illustrates the other associated cutaneous, mucosal and nail abnormalities seen in both the groups.

	Cases	Controls
Refractory Error	1(2%)	3(10%)
Pigmentary abnormality	4(8%)	-
Fundus	-	-

Table 13: Ophthalmological Examination

On ophthalmic examination by an Ophthalmologist, 1 (2%) child and 3 (10%) adults were found to have refractory errors. 4 (8%) children had pigmentary abnormalities on slit-lamp examination, including 2 with focal iris depigmentation and one each with heterochromia of the iris and a pigmented mole over the iris.

	Cases	Controls
Ear abnormality(CSOM)	2(4%)	-
Tonsillitis	8(16%)	1(3.3%)
Nose abnormality	-	1(3.3%)
Audiometry	2(4%)	-

Table 14: ENT Examination

On examination by an ENT surgeon, evidence of chronic suppurative otitis media was found in 2 (4%) of the children and none of the adults. Tonsillar infection (acute/chronic) was found in 8 (16%) children and none of the adults. A nose abnormality in the form of deviated nasal septum was seen in one adult patient. Ten each of the children and the adult control groups were subjected to subjective audiometric testing. Out of them, two (4%) children were found to have mild hearing loss of up to 15 decibels, which was not clinically significant. None of the adults had significant hearing loss detected.

	Cases	Controls
Dental Caries	9(18%)	1(3.3%)
Fluorosis	-	2(6.6%)
Chronic gingivitis	-	3(10%)

Table 15: Dental Examination

Dental caries with one or more infected teeth were seen in 9 (18%) children and 1 (3.3%) adult respectively. In addition, other dental changes seen include fluorosis in 2 (6.6%), dental calculi in 3 (10%) and chronic gingivitis in 3 (10%) adults.

	Cases	Controls
Average Hb	10.5 g%	11 g%
Anaemia	11(22%)	4(13.3%)
Abnormal Biochemistry	2(4%)	1(3.3%)
Abnormal CUE	13(26%)	4(13.3%)
Stool Ova/cyst	5(10%)	1(3.3%)
Entamoeba	2(4%)	1(3.3%)
Giardia	2(4%)	-
Ascaris	-	-
Enterobius	2(4%)	-
Trichuris	1(2%)	-
ESR	18(36%)	10(33.3%)

Table 16: Investigations

The average haemoglobin was 10.5 g% in the children and 11 g% in the adults. Anaemia defined by a haemoglobin level of less than 10 g% was seen in 11 (22%) children and 4 (13.3%) adults. Elevated blood sugar levels (Random Blood Sugar > 120 mg%) were seen in 2 (4.0%) children and 1 (3.3%) of the adults respectively.

DISCUSSION: This study was done to evaluate the clinical profile of the Vitiligo in the Paediatric Population. The incidence of childhood Vitiligo in our department during the study period was 0.32%. This is lesser than the incidence of new cases in the studies by Jai Shankar et al[7] (2.6%) and Marian Levai[8] (4%). This low incidence may be explained by fact that ours is a tertiary referral hospital in a large metropolitan city with large number of practicing dermatologists and other system of medicine like Unani, Ayurveda were available for Vitiligo patients.

The mean age at onset of vitiligo in the present study was 8.36 years. This is higher than that found in the study by Robet Haider et al[9] which it at 4.6 years. This reflects the genetic differences in both groups with a probable delayed onset in the darkly pigmented populations.

The sex ratio of 2.1: 2.9 shows a more even distribution. This is contrast to the study by Jai Shankar et al where the number of girls was significantly higher with a sex ratio of 2:3, the sex ratio in adults was similar to that in our study.

The predominant site of onset was found to be the extremities especially the lower limbs and followed by the face. This is comparable to the findings of Jai Shankar et al where the major site of onset was equally distributed among limbs and the head and neck and to the study by NR Mehta et al[10] where the major site was the extremities.

The disease progression was found to be stable in the study group. A history of trauma predisposing to the onset of lesions was seen in a higher number of children 24% when compare to adult 6.6%. The incidence in adults is comparable to the studies with history of trauma positive in

5.33% (R V Koranne et al[11]) and 6.06% (NR Mehta et al). The incidence of the same in children seems to be significantly higher.

A history of typhoid fever and other febrile illness preceding the onset of vitiligo was seen in 10% of children. This is similar to that found by Marian Levai (8%) and double to that found by NR Mehta et al. This reflects a general predisposition of children to febrile illness than implication of fever or any illness as aetiological agents.

The occurrence of diabetes, hypertension and thyroid abnormality are not seen in any of the study group. This is comparable with the studies by Haider et al and Jaisankar et al where none of the study children had similar diseases. Dawber R[12] and Montagnani et al[13] provided further evidence supporting the association between vitiligo and diabetes mellitus.

The findings of the refractory errors (2%), squint (2%), chronic bronchitis (2%) and atopic diathesis (2%) are not statistically significant to reflect true association. The incidence of positive family history of vitiligo is seen in 22% of children when compared to adult controls (6.6%).

This is comparable to the study done by Jaisankar et al (33% children, 2.7 adults). This is also found to be much lesser than the incidence found by Rebat Haider et al (35% Children, 29% adult control).

A history of consanguinity among the parents was positive in a higher number of children (30%) when compared to adult control (13.3%). Comparative values from other studies are lacking, this may reflect a genetic predisposition to vitiligo.

A positive history of premature greying was found in 52% of cases when compared to adult control (20%). On comparison, both the values are higher to the findings of Rebat Haider et al with 22% children, 14% adult controls.

A positive family history of endocrine disease i.e. Diabetes Mellitus is found in 3.2% of the children in study group which is less in comparison to 28% of the Haider et al study giving a family history of Diabetes.

A personal history of passing worms in stool and hobbies involving contract with colours/oil paints was found in 6% of the children. Mild-to-moderate psychological stress (84%) among study group was noted on comparison with adult control group (90%) having moderate-to-severe psychological component. Detectable anaemia was seen in 20% of children and 16.6% adults; mild thyroid enlargement was seen in 8% of children and 3.3% adult group.

The common clinical type of vitiligo in both study (34%) and control group (33.3%) were found to be vitiligo vulgaris followed by facial (20%) and localised (18%) in children while acral (20%) and acrofacial (20%) in adults.

The incidence of segmental vitiligo was compatible amongst the two groups with 4% in children and 6.6% in the adults. This is found to be different from the findings of Jaisankar et al and Haider et al both of whom noted a high incidence of segmental vitiligo in children (21.1%) and 19% respectively.

Mucosal vitiligo was least common type (2%) in our study group. High incidence of Koebner's phenomenon in children (16%) compared to adults (6%) was noted. Leukotrichia over the lesional skin was comparable in both the study (32%) and control (36%) group. Poliosis was seen in 20% of both the groups in our study. Alopecia areata seen in 4% of study group and none in adult controls. Halo Nevi were seen in 4% of the children and none in adults. Mucosal involvement noticed in children (14%) and adult group (30%).

The most significant ocular abnormalities associated with vitiligo is ocular inflammation or uveitis. The most severe form being described in the Vogt–Koyanagi–Harada syndrome (Barnes et al[14]). On ophthalmological examination, one child and 3 adults were found to have refractory errors of mild-to-moderate severity. 8% of children had pigmentary abnormalities in the form of focal in depigmentation (4%), heterochromia of iris (2%) and pigmented mole over the iris (2%). This is lower in comparison to the findings of Haider et al who found various ocular pigmentary abnormalities in 33% of the children.

Tosti et al[15] demonstrated sensorineural hearing loss of up to 40 dB in 16% of patients of vitiligo. On ENT examination, large number of children were found to have evidence of tonsillar infiltration, and on dental evaluation 18% of the study group and 3% adult group were found to have caries. This is higher than dental caries noted by Jaisankar et al (6.6%). The dental findings among the adult group of our study include fluorosis (6.6%) dental calculi (10%) and chronic gingivitis (10%).

The average Haemoglobin levels of 10.5% among children and 11 g% among the adult group are comparable. These are comparable to those from the studies done by Haider et al; Marian Levai (10.5 g%) and Jaisankar et al (10.5 g%). Most of them had microcytic type of anaemia and no evidence of pernicious anaemia in the peripheral smear.

Raised blood sugar level were seen in 4% of Children and 3.3% adults which needs careful monitoring.

Abnormalities in complete urine examination were seen in 26% of children and 13.3% of adult group which substantiate a high incidence sub clinical urinary tract infection in both groups.

A raised ESR (greater than 20 mm after 7 hour were seen 36% of study group and 33.3% of adult group). This could explain subclinical infections in our study group stool examination for evidence of parasitic infestation was found in 10% of children group.

The common parasitic infestation revealed cysts of Entamoeba (4%) and Trichuriasis (2%). This incidence is lower than that of 26% among children as noted in the study of childhood vitiligo by Jaisankar et al.

CONCLUSION: To summarise and conclude the findings of this study vitiligo in children seems to present with a diverse clinical spectrum with a predominance of stable but generalised disease associated with a high incidence of cutaneous features like Koebner's phenomenon leukotrichia and poliosis and systemic evidence of subclinical foci of infection in the form of dental caries, upper respiratory tract infections, urinary tract infection or parasitic infestation.

There is also a high incidence of positive family history of vitiligo and also of consanguinity among parents. Premature greying of hair and diabetes mellitus among the family members. There is a significant incidence of microcytic anaemia. However, psychological stress due to the disease and ocular and audiometric abnormalities were found to be less.

Thus, these findings suggest the need for extensive evaluation of a child with vitiligo and also need for evaluation of family members for associated endocrine disease.

FUTURE DIRECTIONS: The inter-relationships between the high incidence of subclinical infection and the course of vitiligo need to be studied in detail in a large subgroup of patients.

Therapeutic response to various treatment regimens could be compared between the paediatric and adult groups.

The inter-relationships between the ocular and auditory abnormalities and the clinical type and course of the vitiligo need to be studied in detail.

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